REVIEWS AND ABSTRACTS OF LITERATURE

A Survey of Symbolic Logic. C. I. LEWIS. Berkeley: University
of California Press. 1918. Pp. iv + 406.

This work, which appeared among the Semi-centennial Publica-
tions of the University of California, fills an important hiatus in the
literature of logistics and mathematical logic. These studies are of
so recent an origin that there has been till now no opportunity to
consolidate into a single treatise anything but their most simple and
primitive aspects. Accordingly the student, after leaving the almost
childishly simple Boolean algebra as presented in the writings of
Couturat and del Ré, is immediately confronted with that for-
bidding monument of patience and research, the *Principia Mathe-
matica* of Whitehead and Russell. He encounters an unfamiliar
symbolism, new methods, and a most exacting standard of rigor. It
is only after he has become proficient in this new field that he can
discern the fundamental unity underlying the investigations of
Boole, De Morgan, Peirce, and Schröder, on the one hand, and those
of Frege, Whitehead, and Russell, on the other.

Professor Lewis has written a work that completely bridges over the
gap between the old and the new. He treats the history of symbolic
logic in an impartial and comprehensive way, slighting neither the
founders of the classical theory nor the principal innovators of the
present day. After a good résumé of the classical theory of equa-
tions and inequations, he proceeds to a parallel development of the
foundations of the logic of propositions, propositional functions,
and classes on the Boole-Peirce-Schröder basis and on that of the
Principia, exhibiting both the formal identity of the two systems
and the inadequacy of Peirce's enumerative method of defining uni-
versal and particular propositions in terms respectively of iterated
logical multiplication and iterated logical addition. There is a
mass of excellent detail work in this connection, so that this part of
the book should prove useful as a glossary for those who desire to
transfer statements from the Peirce symbolism to that of Russell
and *vice versa.*

Chapter V is devoted to Professor Lewis's personal contribu-
tion to the subject—the calculus of strict implication. This valu-
able piece of work is here for the first time gathered together in a
unified and definitive presentation. It unquestionably constitutes
a legitimate alternative to the ''material implication'' of the earlier
writers, but the reviewer does not consider that it has been definitely
established that ''strict implication'' is not simply formal implica-
tion between propositional functions whose variability is suppressed.

The last chapter concerns the relations between logistic and

mathematics. The Russellian view is fairly expounded, but the author also develops a "heterodox" standpoint, from which both logistic and mathematics become a manipulation of symbols by a method of substitution whose laws can never be stated exhaustively in a symbolic form. This constitutes a perfectly just criticism of the part played by non-symbolic postulates in the *Principia*. Lewis is quite right in pointing out that the postulates of the *Principia* differ from other postulates in degree rather than in kind.

Among other things, Lewis contrasts the encyclopedic logistic of Peano, the deductive logistic of Russell, and the synthetic logistic of Royce, in which many types of order are obtained by the specification of a more general, inclusive order. A notion not introduced by Lewis, but worthy of comment in this connection, is that of categoricity with reference to a particular set of concepts, introduced into mathematics by R. L. Moore. Moore has pointed out that a non-categorical set of postulates may still completely determine the formal properties of some notion that may be obtained from the undefined terms. A set of very few postulates—even a set of no postulates at all—may thus determine a number of completely specified notions, if used in conjunction with the appropriate definitions. It is hence possible to build up a theory of order—that is, a logistic— based primarily or even exclusively on definitions instead of on postulates. This, I imagine, is more or less what the Royce logistic proposes, and what Mr. Lewis considers a promising alternative to more developed methods.

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The Field of Philosophy. JOSEPH ALEXANDER LEIGHTON. Second revised and enlarged edition. Columbus: R. G. Adams and Company. 1919. Pp. 475.

To write a satisfactory Introduction to Philosophy is no mean task. Those who have tried it will, I am sure, agree with me in this statement. Especially is it difficult in this period of the renewal of philosophy, when there is such an apparent diversity of opinion, when philosophy is like a vine full of sap sending tendrils in every direction.

There are two ways of approach to the study of philosophy, the historical and the analytic. I do not mean to assert that one of these ways must exclude the other, but only that one of them must dominate. Professor Leighton realizes that "the History of Philosophy should be a second course." Yet he is also aware that "a purely topical and systematic introduction fails to bring the student in contact with the great historical doctrines in other than the scrap-